

How to launch virtual machines on AWS for test purposes (AWS = Amazon Web Services)

HK, FermiCloud

July 2 2014

Overview

- I am no expert in using Amazon Web Services
 - Experience-hand-over from one beginner to others
- Using AWS is as easy as using FermiCloud
 - if we simply want to launch VMs from stock images
- But sometimes, we need to use our own images/kernels for special purposes:
 - e.g. we can not launch hundreds and customize one by one, we need to upload already-customized image and launch hundreds of VMs off that image

Three uses of AWS

1. Ordinary AWS virtual machines
 - just follow the steps in AWS web page
2. AWS virtual machines from our own image

Necessary steps are

1. Upload an image in AWS EBS
2. Create a snapshot
3. Create(register) an AMI


❖ Launch

3. If have to use our own kernel in addition to our own image, these steps get more complicated

Part 1

- Ordinary AWS virtual machines
 - just follow the steps in AWS web page
- AWS virtual machines from our own image
 - Necessary steps are
 - Upload image in AWS EBS
 - Create a snapshot
 - Create(register) an AMI
 - Launch
- If have to use our own kernel in addition to our own image, above 4 get more complicated






Go to aws.amazon.com

**Services** ▾ **Edit** ▾





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Amazon Web Services





Compute & Networking

-  **Direct Connect**
-  **EC2**
Virtual Servers in the Cloud
-  **Route 53**
Scalable Domain Name System
-  **VPC**
Isolated Cloud Resources
-  **WorkSpaces**
Desktops in the Cloud







Storage & Content Delivery

-  **CloudFront**
Global Content Delivery Network
-  **Glacier**
Archive Storage in the Cloud
-  **S3**
Scalable Storage in the Cloud
-  **Storage Gateway**
Integrates On-Premises IT Environments with Cloud Storage




Database

-  **DynamoDB**
Predictable and Scalable NoSQL Data Store
-  **ElastiCache**
In-Memory Cache
-  **RDS**
Managed Relational Database Service
-  **Redshift**
Managed Petabyte-Scale Data Warehouse Service








Deployment & Management

-  **CloudFormation**
Templated AWS Resource Creation
-  **CloudTrail**
User Activity and Change Tracking
-  **CloudWatch**
Resource and Application Monitoring
-  **Elastic Beanstalk**
AWS Application Container
-  **IAM**
Secure AWS Access Control
-  **OpsWorks**
DevOps Application Management Service

Analytics

-  **Data Pipeline**
Orchestration for Data-Driven Workflows
-  **Elastic MapReduce**
Managed Hadoop Framework
-  **Kinesis**
Real-time Processing of Streaming Big Data

App Services


-  **AppStream**
Low Latency Application Streaming
-  **CloudSearch**
Managed Search Service
-  **Elastic Transcoder**
Easy-to-use Scalable Media Transcoding
-  **SES**
Email Sending Service
-  **SNS**
Push Notification Service
-  **SQS**
Message Queue Service
-  **SWF**
Workflow Service for Coordinating Application Components

Additional Resources

[Getting Started](#)
See our documentation to get started and learn more about how to use our services.

[Trusted Advisor](#)
Best practice recommendations to save money, improve fault tolerance, increase performance, and close security gaps.

Service Health


 All services operating normally.

Updated: Jul 01 2014 09:45:00 GMT-0500

[Service Health Dashboard](#)

Set Start Page

[Console Home](#) ⬆

 **AWS Marketplace**
Find & buy software, launch with 1-Click and pay by the hour.

- EC2 Dashboard**
Events
Tags
Reports
Limits
- INSTANCES ▾
Instances
Spot Requests
Reserved Instances
- IMAGES**
AMIs
Bundle Tasks
- ELASTIC BLOCK STORAGE ▾
Volumes
Snapshots
- Security Groups
Elastic IPs
Placement Groups
Load Balancers
Key Pairs
Network Interfaces
- AUTO SCALING ▾
Launch Configurations

Resources

You are using the following Amazon EC2 resources in the US West (Oregon) region:

0 Running Instances
1 Volume
2 Key Pairs
0 Placement Groups

0 Elastic IPs
2 Snapshots
0 Load Balancers
5 Security Groups

... Easily deploy and operate applications - use Chef recipes, manage SSH users, and more. [Try OpsWorks now.](#)

Hide

Create Instance

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Launch Instance

Note: Your instances will launch in the US West (Oregon) region

Service Health

Service Status:

✓ US West (Oregon):
This service is operating normally

Availability Zone Status:

✓ us-west-2a:
Availability zone is operating normally

Scheduled Events

US West (Oregon):

No events

Account Attributes

Supported Platforms

VPC

Default VPC

vpc-ed33af86

Additional Information

[Getting Started Guide](#)

[Documentation](#)

[All EC2 Resources](#)

[Forums](#)

[Pricing](#)

[Contact Us](#)

AWS Marketplace

Find **free software trial** products in the AWS Marketplace from the [EC2 Launch Wizard](#).

Or try these popular AMIs:

[Vyatta Virtual Router/Firewall/VPN](#)

Provided by Vyatta, Inc.

Rating ★★★★★

Pay by the hour for software and AWS usage

[View all Networking Software](#)



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1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Tag Instance

6. Configure Security Group

7. Review

Step 1: Choose an Amazon Machine Image (AMI)

[Cancel and Exit](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Quick Start

My AMIs

AWS Marketplace

Community AMIs

☐ Free tier only ⓘ

Amazon Linux AMI 2014.03.2 (HVM) - ami-d13845e1

Select

Amazon Linux

Free tier eligible

The Amazon Linux AMI is an EBS-backed image. It includes Linux 3.10, AWS tools, Java 7, Ruby 2, and repository access to multiple versions of Apache, MySQL, PostgreSQL, Python, Ruby and Tomcat.

64-bit

Root device type: ebs Virtualization type: hvm



Red Hat Enterprise Linux 7.0 (HVM) - ami-77d7a747

Select

Red Hat

Free tier eligible

Red Hat Enterprise Linux version 7.0 (HVM), EBS-backed

64-bit

Root device type: ebs Virtualization type: hvm



SUSE Linux Enterprise Server 11 sp3 (HVM) - ami-a8fe9898

Select

SUSE Linux

Free tier eligible

SUSE Linux Enterprise Server 11 Service Pack 3, EBS-backed. Nvidia driver installs automatically during startup.

64-bit

Root device type: ebs Virtualization type: hvm



Ubuntu Server 14.04 LTS (HVM) - ami-6cc2a85c

Select

Ubuntu

Free tier eligible

Ubuntu Server 14.04 LTS (HVM), EBS-backed with support available from Canonical (<http://www.ubuntu.com/cloud/services>).

64-bit



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[1. Choose AMI](#)[2. Choose Instance Type](#)[3. Configure Instance](#)[4. Add Storage](#)[5. Tag Instance](#)[6. Configure Security Group](#)[7. Review](#)

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by:

All instance types

Current generation

[Show/Hide Columns](#)

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Moderate
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Moderate
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Moderate
<input type="checkbox"/>	General purpose	m3.medium	1	3.75	1 x 4 (SSD)	-	Moderate
<input type="checkbox"/>	General purpose	m3.large	2	7.5	1 x 32 (SSD)	-	Moderate
<input type="checkbox"/>	General purpose	m3.xlarge	4	15	2 x 40 (SSD)	Yes	High

[Cancel](#)[Previous](#)[Review and Launch](#)[Next: Configure Instance Details](#)



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[1. Choose AMI](#)[2. Choose Instance Type](#)[3. Configure Instance](#)[4. Add Storage](#)[5. Tag Instance](#)[6. Configure Security Group](#)[7. Review](#)

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot Instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances ⓘ

1

Purchasing option ⓘ

☐ Request Spot Instances

Network ⓘ

vpc-ed33af86 (172.31.0.0/16) (default) ▾

[Create new VPC](#)

Subnet ⓘ

No preference (default subnet in any Availability Zone) ▾

[Create new subnet](#)

Public IP ⓘ

☒ Automatically assign a public IP address to your instances

IAM role ⓘ

None ▾

Shutdown behavior ⓘ

Stop ▾

Enable termination protection ⓘ

☐ Protect against accidental termination

Monitoring ⓘ

☐ Enable CloudWatch detailed monitoring[Additional charges apply.](#)

Tenancy ⓘ

Shared tenancy (multi-tenant hardware) ▾

[Additional charges will apply for dedicated tenancy.](#)[Cancel](#)[Previous](#)[Review and Launch](#)[Next: Add Storage](#)



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Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Delete on Termination ⓘ	Encrypted ⓘ
Root	/dev/xvda	snap-d15cde24	<input type="text" value="8"/>	<div>Magnetic ▾</div>	N/A	<input checked="" type="checkbox"/>	Not Encrypted
<div>Add New Volume</div>							



[General Purpose \(SSD\)](#) volumes provide the ability to burst to 3,000 IOPS per volume, independent of volume size, to meet the performance needs of most applications and also deliver a consistent baseline of 3 IOPS/GiB. [Set my root volume to General Purpose \(SSD\).](#)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

[Cancel](#)[Previous](#)[Review and Launch](#)[Next: Tag Instance](#)



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Step 5: Tag Instance

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. [Learn more](#) about tagging your Amazon EC2 resources.

Key (127 characters maximum)

Value (255 characters maximum)

Name



Create Tag

(Up to 10 tags maximum)

Cancel

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Review and Launch

Next: Configure Security Group



Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☐ Create a new security group
☒ Select an existing security group

Security Group ID	Name	Description	Actions
<input checked="" type="checkbox"/> sg-5e04f031	default	default VPC security group	Copy to new
<input type="checkbox"/> sg-a6b80dc3	fermi-condor-worknode	security group for the ec2 condor workers	Copy to new
<input type="checkbox"/> sg-d6aa4db3	launch-wizard-1	launch-wizard-1 created on Tuesday, January 1...	Copy to new
<input type="checkbox"/> sg-5000aa35	launch-wizard-2	launch-wizard-2 created on Thursday, June 26, ...	Copy to new
<input type="checkbox"/> sg-5204f03d	quick-start-1	quick-start-1	Copy to new

Inbound rules for sg-5e04f031 Selected security groups: sg-5e04f031.

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ
SSH	TCP	22	0.0.0.0/0
All traffic	All	All	sg-5e04f031 (default)


[Cancel](#)[Previous](#)[Review and Launch](#)


1. Choose AMI
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Step 7: Review Instance Launch

▼ AMI Details

[Edit AMI](#)

**Amazon Linux AMI 2014.03.2 (HVM) - ami-d13845e1**

The Amazon Linux AMI is an EBS-backed image. It includes Linux 3.10, AWS tools, Java 7, Ruby 2, and repository access to multiple versions of Apache, MySQL, PostgreSQL, Python, Ruby and Tomcat.
Root Device Type: ebs Virtualization type: hvm

▼ Instance Type

[Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Moderate

▼ Security Groups

[Edit security groups](#)

Security Group ID	Name	Description
sg-5e04f031	default	default VPC security group

All selected security groups inbound rules

Security Group ID	Type 	Protocol 	Port Range 	Source 
-------------------	--	--	--	--

[Cancel](#)

[Previous](#)

[Launch](#)

SSH KeyGen

The screenshot shows the AWS Management Console interface during the 'Step 7: Review Instance Launch' process. The background shows the 'AMI Details' section with 'Amazon Linux AMI' selected. The 'Instance Type' section shows 't2.micro'. The 'Security Groups' section shows 'sg-5e04f031'. A modal dialog titled 'Select an existing key pair or create a new key pair' is open. The dialog contains the following text: 'A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to securely SSH into your instance.' Below this text is a note: 'Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about removing existing key pairs from a public AMI.' There are two dropdown menus: 'Choose an existing key pair' and 'Select a key pair'. The 'Select a key pair' dropdown menu has 'fcaws' selected. At the bottom of the dialog, there is a checkbox labeled 'I acknowledge that I have access to the selected private key file (fcaws.pem), and that without this file, I won't be able to log into my instance.' which is checked. There are 'Cancel' and 'Launch Instances' buttons at the bottom right of the dialog. The background also shows 'Network Performance' and 'Edit security groups' links.

Services Edit

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

AMI Details

Amazon Linux AMI

Free tier eligible

The Amazon Linux AMI is pre-installed with PostgreSQL, Python, Ruby, and Java. Root Device Type: ebs

Instance Type

Instance Type	ECUs
t2.micro	Variable

Security Groups

Security Group ID
sg-5e04f031

All selected security groups include:

Security Group ID	Type	Protocol	Port Range	Source
-------------------	------	----------	------------	--------

Network Performance

Moderate

Edit instance type

Edit security groups

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about removing existing key pairs from a public AMI.

Choose an existing key pair

Select a key pair

fcaws

☒ I acknowledge that I have access to the selected private key file (fcaws.pem), and that without this file, I won't be able to log into my instance.

Cancel Launch Instances

Cancel Previous Launch

Different Credentials

To learn more about the types of AWS credentials and how they're used, see [AWS Security Credentials](#) in the general reference.

+ Password

+ Multi-Factor Authentication (MFA)

- Access Keys (Access Key ID and Secret Access Key)

Note: You can have a maximum of two access keys (active or inactive) at a time.

Created	Deleted	Access Key ID	Status	Actions
Sep 26th 2013		AKIAI6W66HIL2L3T7ADQ	Active	Make Inactive Delete
Jul 1st 2014		AKIAJQJEHMOPDVNDBBCA	Active	Make Inactive Delete



Important Change - Managing Your AWS Secret Access Keys

As described in a [previous announcement](#), you cannot retrieve the existing secret access keys for your AWS root account, though you can still create a new root access key at any time. As a [best practice](#), we recommend [creating an IAM user](#) that has access keys rather than relying on root access keys.

+ CloudFront Key Pairs

- X.509 Certificates

Note: You can have a maximum of two X.509 certificates (active or inactive) at a time.

Created	Deleted	Thumbprint	Status	Actions
Oct 15th 2013		RCEMEYVW3YN2XNIXBFMVI5TZM7STIQJB (Download Certificate)	Active	Make Inactive Delete



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Launch Status



Your instance is now launching

The following instance launch has been initiated: **i-0788840f** [View launch log](#)



Get notified of estimated charges

[Create billing alerts](#) to get an email notification when estimated charges on your AWS bill exceed \$0.0 (in other words, when you have exceeded the free usage tier).

How to connect to your instance

Your instance is launching, and it may take a few minutes until it is in the **running** state, when it will be ready for you to use. Usage hours on your new instance will start immediately and continue to accrue until you stop or terminate your instance.

Click **View Instances** to monitor your instance's status. Once your instance is in the **running** state, you can **connect** to it from the Instances screen. [Find out](#) how to connect to your instance.

▼ Here are some helpful resources to get you started

- [How to connect to your Linux instance](#)
- [Amazon EC2: User Guide](#)
- [Learn about AWS Free Usage Tier](#)
- [Amazon EC2: Discussion Forum](#)

While your instances are launching you can also

[Create status check alarms](#) to be notified when these instances fail status checks. (Additional charges may apply)

[Create and attach additional EBS volumes](#) (Additional charges may apply)

[Manage security groups](#)

EC2 Dashboard
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NETWORK & SECURITY

Security Groups

Elastic IPs

Placement Groups

Load Balancers

Key Pairs

Network Interfaces

Launch Instance

Connect

Actions ^

Filter: All instances

Name Instance ID

i-0788840f

i-7dbeb375

Instance: i-0788840f Public

Description

Status Checks

Instance ID

Instance state

Instance type

Instance Management

Launch More Like This

Add/Edit Tags

Change Instance Type

Create Image

Bundle Instance (instance store AMI)

Change Termination Protection

View/Change User Data

Change Shutdown Behavior

Get Windows Password

Get System Log

Networking

Change Security Groups

Attach Network Interface

Detach Network Interface

Disassociate Elastic IP Address

Change Source/Dest. Check

Manage Private IP Addresses

Actions

Terminate

Reboot

Stop

Start

CloudWatch Monitoring

Enable Detailed Monitoring

Disable Detailed Monitoring



1 to 2 of 2 Instances

Instance State Status Checks Alarm Status Public DNS

running Initializing None ec2-54-191-55-97.

stopped None

compute.amazonaws.com

Public DNS ec2-54-191-55-97.us-west-2.compute.amazonaws.com

Public IP 54.191.55.97

System Log: i-0788840f



```
No packages needed for security; 4 packages available
Resolving Dependencies
Generating SSH1 RSA host key: [ OK ]
Starting sshd: [ OK ]
ntpd: Synchronizing with time server: [ OK ]
Starting ntpd: [ OK ]
Starting sendmail: [ OK ]
Starting sm-client: [ OK ]
Starting crond: [ OK ]
Starting atd: [ OK ]
Starting cloud-init: Cloud-init v. 0.7.2 running 'modules:final' at Tue, 01 Jul 2014 14:52:34 +0000. Up
ci-info: +Authorized keys from /home/ec2-user/.ssh/authorized_keys for user ec2-user+

ci-info: Keytype                Fingerprint (md5)                Options  Comment
ci-info:  ssh-rsa  22:9e:a2:fd:91:b1:55:cl:bc:2c:a2:35:33:26:50:93  -        fcaws

ec2:
ec2: #####
ec2: -----BEGIN SSH HOST KEY FINGERPRINTS-----
ec2: 1024 cl:e2:ec:b7:12:53:79:36:14:5d:d2:bd:a5:3b:73:17  root@ip-172-31-0-111 (DSA)
ec2: 256 3b:f0:dc:ee:b6:eb:87:a1:07:a5:c9:75:c3:02:51:f5  root@ip-172-31-0-111 (ECDSA)
ec2: 2048 ec:b8:82:df:e2:cb:ad:e5:4c:62:84:2a:b1:62:87:ca  (RSA1)
ec2: 2048 35:1e:18:b6:ee:e5:32:cc:2c:b3:16:ac:f2:d3:a7:14  root@ip-172-31-0-111 (RSA)
ec2: -----END SSH HOST KEY FINGERPRINTS-----
ec2: #####
ec2: -----BEGIN SSH HOST KEY KEYS-----
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBJKx+Q4dB0X+pwfkrOghIdGdtc8ZQ26
2048 65537 22681704154185690269119583294385776906787537324231080111861836590370399992254847906865284957
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQDUzn0KqiyqrqxexyC81PjwOP3pUSg7zi0GKvmQPOf99K08w/PO0WAU+cSedmyvb0
-----END SSH HOST KEY KEYS-----

Cloud-init v. 0.7.2 finished at Tue, 01 Jul 2014 14:52:34 +0000. DataSource DataSourceEc2. Up 31.66 s

Amazon Linux AMI release 2014.03
Kernel 3.10.42-52.145.amzn1.x86_64 on an x86_64

ip-172-31-0-111 login:
```

Close

```
mac-120532:AWS hyunwoo$ ssh -i fcaws.pem ec2-user@ec2-54-191-55-97.us-west-2.compute.amazonaws.com
```

```
  _|  _|_ )  
  _| (  _/  Amazon Linux AMI  
  __|\__|__|
```

```
https://aws.amazon.com/amazon-linux-ami/2014.03-release-notes/
```

```
No packages needed for security; 4 packages available
```

```
Run "sudo yum update" to apply all updates.
```

```
[ec2-user@ip-172-31-0-111 ~]$ ls -lrt
```

```
total 0
```

```
[ec2-user@ip-172-31-0-111 ~]$ pwd
```

```
/home/ec2-user
```

```
[ec2-user@ip-172-31-0-111 ~]$ █
```

Part 2

- Ordinary AWS virtual machines
 - just follow the steps in AWS web page
- AWS virtual machines from our own image
 - Necessary steps are
 1. Upload image in AWS EBS
 2. Create a snapshot
 3. Create(register) an AMI
 - Launch
- If have to use our own kernel in addition to our own image, above 4 get more complicated

How to upload our own image

- Launch a stock AWS Virtual Machine
 1. EBS that holds our image: `ec2-create-volume`
 - create new one and copy local image there
 - or **create one from the snapshot(next page)**
 2. Create a snapshot: `ec2-create-snapshot`
 3. Generate an AMI
 - `ec2-register` with `snapshot-id`
 - or use the web
- Launch: `ec2-run-instances` or web

Debugging in the image

- `ec2-create-volume --snapshot snap-6b0d2f57`
=> VOLUME ID is returned : `vol-19be4c31`
 - `ec2-attach-volume vol-19be4c31`
`--instance i-bceffa88 --device /dev/sdh`
 - `sudo mount /dev/sdh1 /mnt`
 - `vi /mnt/somefile` for example
 - `sudo umount /mnt`
- `ec2-create-snapshot`

Part 3

- Ordinary AWS virtual machines
 - just follow the steps in AWS web page
- AWS virtual machines from our own image
 - Necessary steps are
 - Upload image in AWS EBS
 - Create a snapshot
 - Create(register) an AMI
 - Launch
- If have to use our own kernel in addition to our own image, above 2 get more complicated

How to use our own kernel?

(At this point, we have a new AML-id)

- This question concerns us at the launching step
 - `ec2-run-instances --kernel aki-f837bac8`
(could not find web-equivalent)
- *Normally, AWS will overwrite our own kernel*
- *If we want to keep our own kernel, we need to tell AWS to wrap our kernel with a special type of AWS-kernel*

The giWMS needs more

- Uses ec2-run-instances command with AMI only
♦ **without --kernel option**
- This forces use to find a way where the new AMI should be attached with aki-f836bac8 when we generate the new AMI
- Remember ec2-register command was used, but could not find any option to attach this AKI to the new AMI
- Using AWS web site is the solution
(Remember we have a snapshot at this point)

1. EBS that holds our image: `ec2-create-volume`
 - create new one and copy local image there
 - or create one from the snapshot
2. Create a snapshot: `ec2-create-snapshot`
3. Generate an AMI
 - `ec2-register` with `snapshot-id`
 - or use the web
- Launch: `ec2-run-instances` or web

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Elastic IPs

Placement Groups

Load Balancers

Create Snapshot

Actions

Delete

Create Image

Modify Snapshot Permissions

Add/Edit Tags

Filter: Owned By M

1 to 2 of 2 Snapshots

Name	Description	Status	Star
	Created by CreateImage(i-e3cc49e8) for ami-43413e73 from vo...	completed	June
	s99local	completed	Janu

Snapshot: snap-6fe70b9b

Description

Permissions

Tags

Snapshot ID	snap-6fe70b9b	Progress	100%
Status	completed	Capacity	10 GiB
Volume	vol-e0982de1	Started	June 30, 2014 9:53:41 AM UTC-5

Services Edit Fermilab - Grid and Cloud Servi... Oregon Help

EC2 Dashboard Events Create Snapshot Actions

Create Image from EBS Snapshot

Name

Architecture

Root device name

RAM disk ID

Description

Virtualization type

Kernel ID

Block Device Mappings

Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Delete on Termination	Encrypted
Root	/dev/sda1	snap-6fe70b9b	10	General Purpose (SSD)	30 / 3000	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Cancel Create

Placement Groups Load Balancers Volume vol-e0982de1 Started June 30, 2014 9:53:41 AM UTC-5

ec2-run-instances or launch button

Summary

- Now, a generic image is ready for us to be able to use giWMS to submit a generic job.
- Next, this “generic” should turn into “FNAL experiment-specific” to be meaningful to us.

Introduction to NoVA Testings

1. Prepare NoVA image to be run in AWS
2. Prepare NoVA job to be sent to that image
3. Debugging

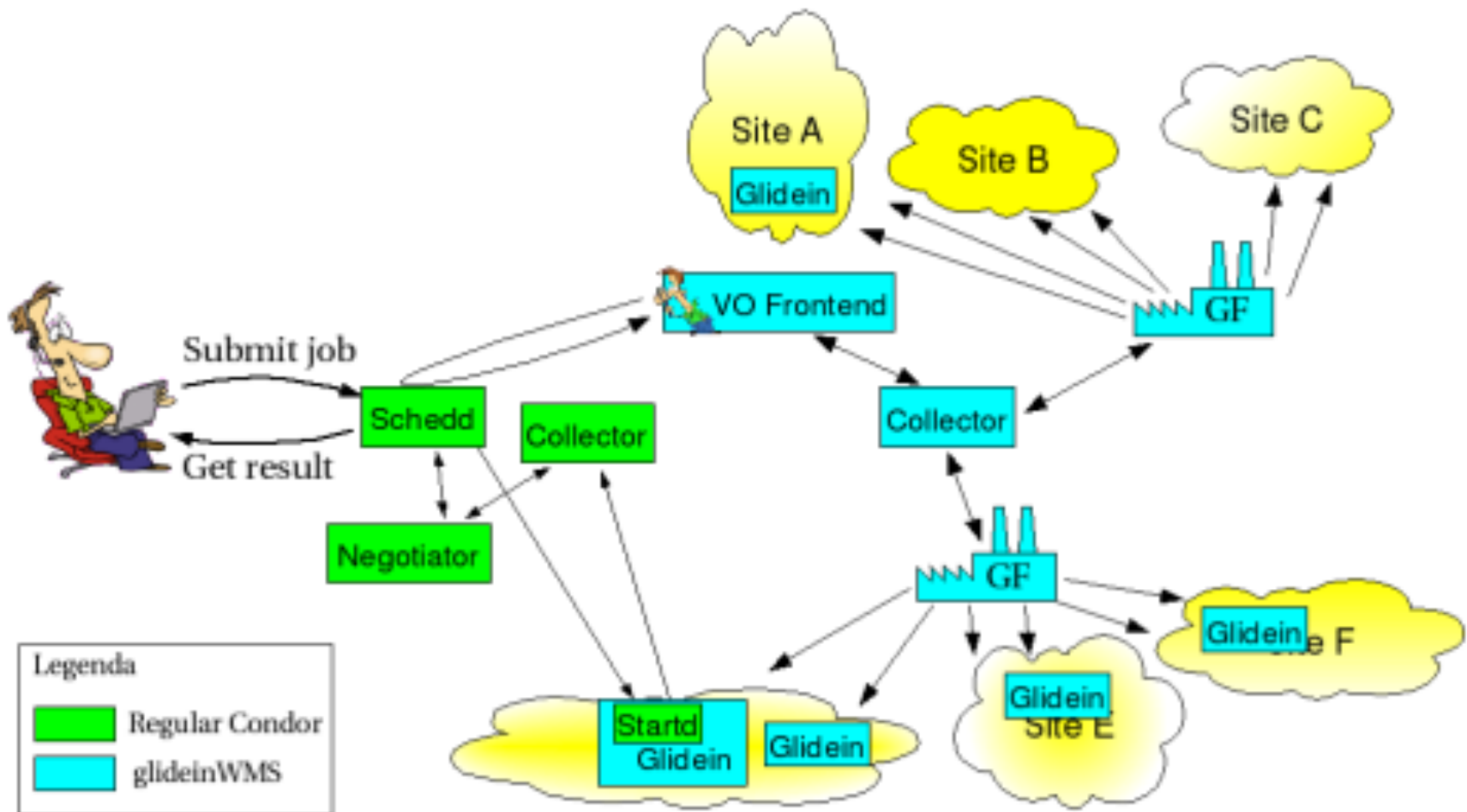
1. Prepare NoVA Image

- Either launch a VM or just mount a partition
- What needs to be done
 - install some RPMs: cvmfs, two giWMS
 - create some directories: /home/glidein_pilot
 - clean up FermiCloud specific
 - /etc/init.d/.credentials
 - TCP Wrapper files(/etc/hosts.allow, deny)

2. Prepare NoVA Jobs

- Configure your job batch submission env
 - experiment-specific node, not gpsn01
 - make sure your group is “nova” for example
 - should not use your home to submit from
 - .bash_profile: GROUP, GRID_USER, EXPERIMENT
 - source one FermiGrid shell script and init jobsub
- Make sure you are using jobsub properly
- Contact GCSO admins(Joe Boyd) for giWMS

JobSub, giWMS and AWS



3. Bugs before one NoVA job ran in AWS successfully

- Special CVMFS proxy server in Fermi
 - modify one file inside image for a new location
- Java code in nova job fails to get local hostname
 - AWS provides a site to translate private IP to pub.
 - /rc3.d/S99local and run hostname command
- Proper use of option of globus-url-copy
 - with -p n option, the server tries to open a new connection with the private IP address of AWS
 - the option delay passive (-dp) forces the server to recycle the same original connection

Summary

- These should cover those basic usages necessary in our department.

Option A: "Instance-Store"

ec2-bundle-image --kernel aki-f837bac8

ec2-upload-bundle -b S3bucket

Option B: "EBS"

ec2-create-volume (new volume in EBS)

ec2-attach-volume (as /dev/sdh)

Upload an image using scp or rsync

ec2-create-snapshot (another volume)

ec2-register : results in a new AMI, ami-nnnnnn

Option A: S3bucket/image.manifest.xml

Option B: -b /dev/sda=snap-id

Launch
Button

ec2-run-instances ami-nnnnnn

--kernel aki-f837bac8

indirect use of
ec2-run-instances
in glideinwms

HowTo Launch AWS VM 1

- use AWS stock images
- AWS stock kernel used

HowTo Launch AWS VM 2

- upload your image
- use aki-general or default

HowTo Launch AWS VM 3

- upload your image
- use aki-f837bac8